# 4. SAMPLING AND ANALYTICAL TEST RESULTS

## 4.1. Toxicity Test Results

### 4.1.1. Spring 1998 Results

Spring storm event samples were collected at the Rock Creek (reference) and Lyon Creek sites on May 14, 1998. The KCEL received the samples May 14, 1998, and the *Ceriodaphnia dubia*, *Selenastrum capricornutum* and *Lemna minor* chronic toxicity tests were initiated within 29 hours of the collection on May 15, 1998. Results of these tests are provided in Table 3-1.

**Table 3-1. Results of spring 1998 toxicity tests conducted with *C. dubia*, *S. capricornutum* and *L. minor*.**

| SAMPLE SITE | Treatment | *C. dubia* 7-Day Reproduction (Mean Number of Neonates) | *S. capricornutum* Mean 96-Hour Cell Counts (cells/mL x $10^4$) | *L. minor* 7-Day Mean Dry Weight (mg) |
|---|---|---|---|---|
| **Control** | Unfiltered | 28.4 | 371 | 18.10 |
| **Rock Creek** | Unfiltered | 24.4 | 436 | 18.54 |
| **Lyon Creek** | Unfiltered | 18.6* | 165* | 13.27* |
| **Control** | Filtered | NT | NT | NT |
| **Rock Creek** | Filtered | NT | 416 | NT |
| **Lyon Creek** | Filtered | NT | 391 | NT |

*Significantly ($p < 0.05$) less compared to unfiltered Rock Creek sample.

NT = Not tested

Toxicity was observed with all three test species in the unfiltered Lyon Creek sample. Filtration of the Rock Creek sample did not significantly change cell density of *S. capricornutum* when compared to the unfiltered sample ($p > 0.05$); however, filtration did remove the toxicity observed in the Lyon Creek sample. No confounding factors (e.g., protocol deviations) were observed during the test. Control performance and reference toxicant test results were within acceptable limits.

### 4.1.2. Spring 1999 Results

Spring storm event samples were collected at the Rock Creek (reference), Lyon Creek, Juanita Creek, and Lewis Creek sites on June 24, 1999. The *C. dubia* and *S. capricornutum* chronic toxicity tests were initiated within 29 hours of the collection on June 25, 1999. Results of these tests are provided in Table 3-2 and Figure 6.

**Table 3-2. Results of spring 1999 toxicity tests conducted with *C. dubia* and *S. capricornutum*.**

| SAMPLE SITE | Treatment | *C. dubia* 7-Day Reproduction (Mean Number of Neonates) | *S. capricornutum* Mean 96-Hour Cell Counts (cells/mL x $10^4$) |
|---|---|---|---|
| **Control** | Unfiltered | NT | 317 |
| **Rock Creek** | Unfiltered | 20.5 | 364 |
| **Lyon Creek** | Unfiltered | 28.3 | 37* |
| **Juanita Creek** | Unfiltered | 27.8 | 71* |
| **Lewis Creek** | Unfiltered | 26.8 | 254* |
| **Control** | Filtered | 25.1 | 325 |
| **Rock Creek** | Filtered | 12.6* | 330 |
| **Lyon Creek** | Filtered | 16.2* | 346 |
| **Juanita Creek** | Filtered | 19.1 | 135* |
| **Lewis Creek** | Filtered | 17.1 | 319 |

*Significantly ($p < 0.05$) less compared to unfiltered Rock Creek sample.

NT = Not tested

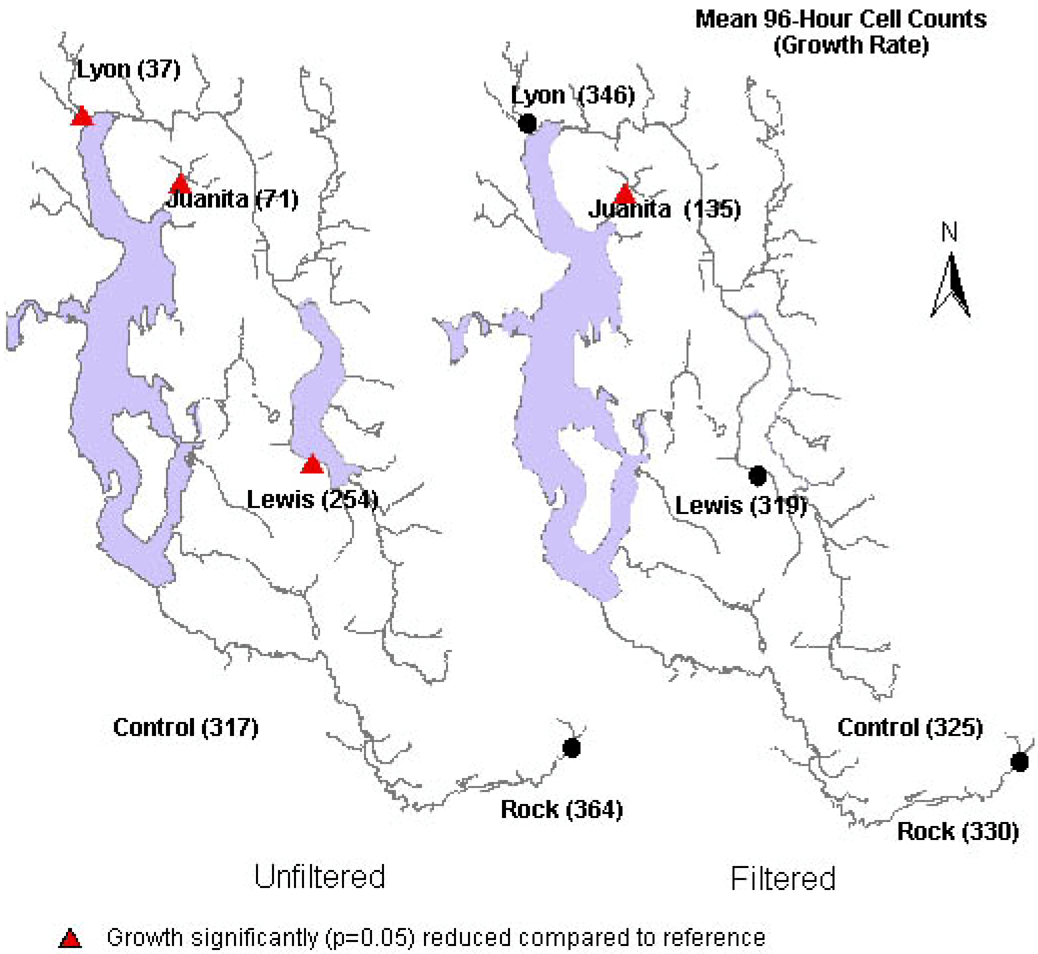



**Figure 6. Spring (June 24, 1999) *S. capricornutum* toxicity test results.**

Reproduction in the *C. dubia* test with unfiltered samples was significantly higher in the urban streams than in Rock Creek, indicating no chronic toxicity to *C. dubia* in the three streams. *C. dubia* is a fine mesh filter feeder living on bacteria, detritus, algae, and other small organisms. The higher reproduction in the three urban streams may be caused by a greater concentration of available food in these streams. The Rock Creek watershed has no residential development, and at the sampling site the stream runs through a coniferous forest. However, lower reproduction in Rock Creek water relative to the in-house control water suggests that water from a pristine site may not always provide the best source of control water for *C. dubia*. This may be a result of relatively lower levels of nutrients supporting smaller populations of indigenous organisms and that are potential food sources for *C. dubia*. In addition, *C. dubia* used in this study are cultured in Lake Washington water with a hardness of approximately 36 mg/L and a pH generally within the range of 7.8 to 8.2. The hardness of the three urban stream samples ranged from 27.5 to 37.5 mg/L, and the pH ranged from 7.35 to 7.80, similar to the culture water hardness and pH. The hardness measured in Rock Creek was 14 mg/L, and the pH was 6.8. Therefore, hardness and pH may be another factor that contributed to the lower reproduction in the Rock Creek samples.

No confounding factors were observed during the test. Control performance and reference toxicant test results were within acceptable limits.

Chronic toxicity to *S. capricornutum* in the unfiltered samples was observed in the three urban streams when compared to Rock Creek. Filtration of the Rock Creek sample did not change cell density when compared to the unfiltered sample ($p > 0.05$); however, filtration did remove toxicity observed in the Lyon and Lewis Creek samples. Several other unidentified algal species were observed in the unfiltered Lyon Creek sample. These species could have competed with *S. capricornutum* and may have been a contributing factor for the limited growth observed in the unfiltered Lyon Creek sample. The overall poor growth observed in the Juanita Creek sample, whether unfiltered or filtered, indicates toxicity as measured by the *S. capricornutum* test. No confounding factors were observed during the test. Control performance and reference toxicant test results were within acceptable limits.

### 4.1.3. Summer 1999 Results

Summer baseline (dry weather) samples were collected at the Rock Creek (reference), Lyon Creek and Juanita Creek sites on August 17, 1999. The *C. dubia* and *S. capricornutum* chronic toxicity tests were initiated within 29 hours of collection on August 18, 1999. Due to a test failure traced to improper diet, the *C. dubia* test results were invalid and the test was re-initiated on August 24, 1999, (7 days after sample collection) with the remaining sample. The remaining sample volume was insufficient to re-conduct the filtered treatment. Results of these tests are provided in Table 3-3 and Figure 7.

**Table 3-3. Results of summer 1999 toxicity tests conducted with *C. dubia* and *S. capricornutum*.**

| SAMPLE SITE | Treatment | *C. dubia* 7-Day Reproduction (Mean Number of Neonates) | *S. capricornutum* 96-Hour Mean Cell Counts (cells/mL x $10^4$) |
|---|---|---|---|
| **Control** | Unfiltered | 28.5 | 325 |
| **Rock Creek** | Unfiltered | 25.4 | 300 |
| **Lyon Creek** | Unfiltered | 25.5 | 285 |
| **Juanita Creek** | Unfiltered | 28.6 | 261* |
| **Control** | Filtered | NT | NT |
| **Rock Creek** | Filtered | NT | 307 |
| **Lyon Creek** | Filtered | NT | 339 |
| **Juanita Creek** | Filtered | NT | 352 |

*Significantly ($p < 0.05$) less compared to unfiltered Rock Creek sample.

NT = Not tested

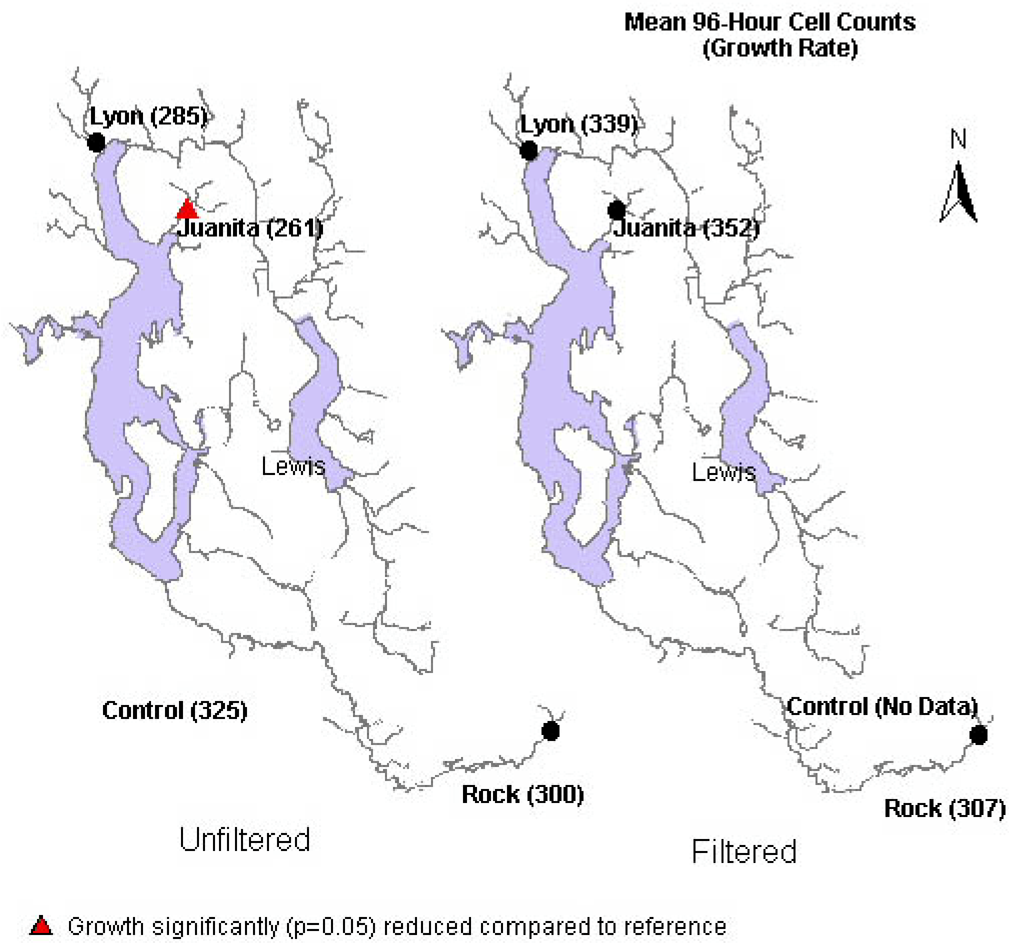



**Figure 7. Summer (August 17, 1999) *S. capricornutum* toxicity test results.**

Reproduction of *C. dubia* with unfiltered urban stream samples collected during summer baseflow conditions was not significantly different from Rock Creek, the reference site. No confounding factors were observed during the test. Control performance was within acceptable limits; however, the reference toxicant test for the month of August failed the acceptability criteria due to improper diet. Improper diet was not a factor in the 24 August 1999 tests, as another diet was used. Results of the reference toxicant test performed in early September were within acceptable limits.

Chronic toxicity to *S. capricornutum* in the unfiltered Juanita Creek sample was observed when compared to Rock Creek. Filtration of the Rock Creek sample did not significantly change the cell density when compared to the unfiltered sample ($p > 0.05$); however, filtration did remove toxicity observed in the Juanita Creek sample. No confounding factors were observed during the test. Control performance and reference toxicant test results were within acceptable limits.

## 4.1.4. Fall 1999 Results

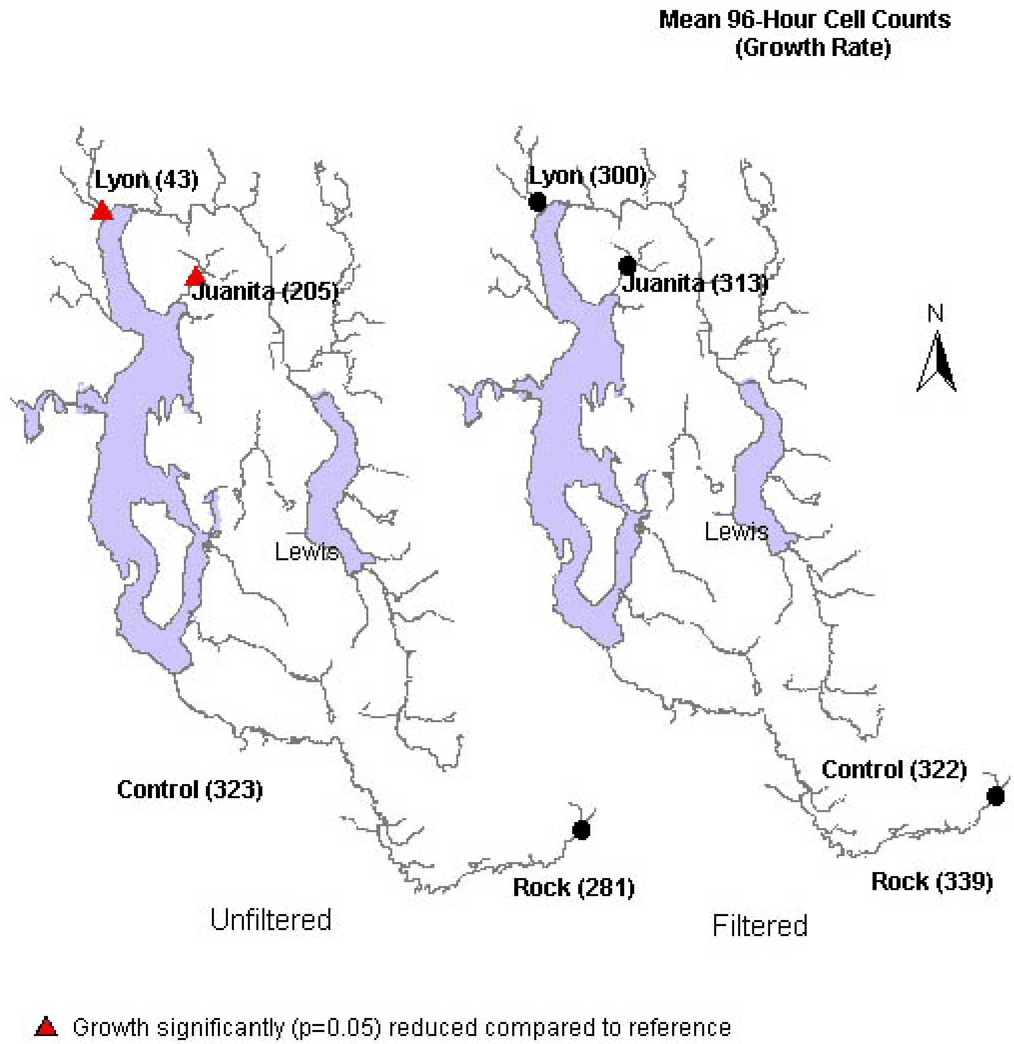
Fall storm samples were collected at the Rock Creek (reference), Lyon Creek, and Juanita Creek sites October 8, 1999. The *C. dubia* and *S. capricornutum* chronic toxicity tests were initiated within 52 hours of collection on October 11, 1999. Results of these tests are provided in Table 3-4 and Figure 8.

**Table 3-4. Results of fall 1999 toxicity tests conducted with *C. dubia* and *S. capricornutum*.**

| SAMPLE SITE | Treatment | *C. dubia* 7-Day Reproduction (Mean Number of Neonates) | *S. capricornutum* 96-Hour Mean Cell Counts (cells/mL x $10^4$) |
|---|---|---|---|
| **Control** | Unfiltered | 25.1 | 323 |
| **Rock Creek** | Unfiltered | 26.4 | 281 |
| **Lyon Creek** | Unfiltered | 29.3 | 43* |
| **Juanita Creek** | Unfiltered | 28.0 | 205* |
| **Control** | Filtered | 22.4* | 322 |
| **Rock Creek** | Filtered | 23.6 | 339 |
| **Lyon Creek** | Filtered | 26.7 | 300 |
| **Juanita Creek** | Filtered | 24.0 | 313 |

*Significantly ($p < 0.05$) less compared to unfiltered Rock Creek sample.

Reproduction in the *C. dubia* test with unfiltered urban stream samples was not significantly different from the Rock Creek reference samples. Reproduction was not significantly ($p < 0.05$) reduced in the filtered urban stream samples compared to that in the unfiltered Rock Creek reference sample. No confounding factors were observed during the test. Control performance and reference toxicant test results were within acceptable limits.




## Figure 8. Fall (October 8, 1999) S. capricornutum toxicity test results

Chronic toxicity to *S. capricornutum* in unfiltered samples was observed in the two urban streams when compared to Rock Creek. Filtration of the Rock Creek sample did not change the cell density when compared to the unfiltered sample ($p > 0.05$); however, filtration did remove the toxicity observed in the Lyon and Juanita Creek samples. No confounding factors were observed during the test. Control performance and reference toxicant test results were within acceptable limits.

The influence of nutrient levels on the algal growth in the stream samples was evaluated in the October 1999 test. At test initiation, nutrients equivalent to the AAM were added to all samples at concentrations of 0.186 mg ortho-phosphate ($PO_4$-P)/L and 4.2 mg nitrate ($NO_3$-N)/L. As shown in Table 3-5, phosphorus uptake, as measured by removal, during the test was approximately uniform in all treatments and samples, whereas nitrogen uptake was slightly less in unfiltered Lyon and Juanita Creek samples. The N:P removal was double the theoretical 16:1 (as atoms), except for Lyon Creek sample. The larger N:P ratio may be accounted for by phosphorus present that was not measured as ortho-phosphate. This suggests sufficient levels of nutrients were present for growth, and nutrient limitation was probably not a factor in the growth reduction observed in the unfiltered samples. In addition, growth in the AAM control was statistically similar to that in Rock Creek, further suggesting that adequate nutrients were available during the test.

**Table 3-5. Initial and final nutrient (orthoP and $NO_2$ +$NO_3$) levels and nutrient removal from unfiltered and filtered samples at the end of the 4-day test.**

| Sample Creek | Treat-ment | OrthoP (mg/L) | | | $NO_2$ + $NO_3$ (mg/L) | | | Removal |
|---|---|---|---|---|---|---|---|---|
| | | Initial | Final | Removal | Initial | Final | Removal | N:P |
| **Rock** | Unfilt. | 0.204[a] | 0.005 | 0.199 | 4.88[a] | 1.84 | 3.04 | 34:1 |
| **Lyon** | Unfilt. | 0.216 | 0.002 | 0.214 | 5.41 | 2.64 | 2.77 | 29:1 |
| **Juanita** | Unfilt. | 0.218 | 0.002 | 0.216 | 5.20 | 2.09 | 3.11 | 32:1 |
| **Rock** | Filt. | 0.204 | 0.006 | 0.198 | 4.88 | 1.70 | 3.18 | 36:1 |
| **Lyon** | Filt. | 0.216 | 0.006 | 0.210 | 5.41 | 1.83 | 3.58 | 38:1 |
| **Juanita** | Filt. | 0.218 | 0.004 | 0.214 | 5.20 | 1.67 | 3.53 | 37:1 |

a : Amount nutrient in spike, there was an undetermined background amount of N and P in the creek samples.

### 4.1.5. Late Fall 1999 Results

Three late fall storm samples were collected at the Rock (reference), Lyon and Juanita Creek sites on November 16, 1999. The *C. dubia* and *S. capricornutum* chronic toxicity tests were initiated within 20 hours of collection on November 17, 1999. Results of these tests are provided in Table 3-6 and Figure 9.

**Table 3-6. Results of late fall 1999 toxicity tests conducted with *C. dubia* and *S. capricornutum*.**

| SAMPLE SITE | Treatment | *C. dubia* 7-Day Reproduction (Mean Number of Neonates) | *S. capricornutum* 96-Hour Mean Cell Counts (cells/mL x $10^4$) |
|---|---|---|---|
| **Control** | Unfiltered | 24.4 | 279 |
| **Rock Creek** | Unfiltered | 18.7 | 268 |
| **Lyon Creek** | Unfiltered | 24.8 | 249 |
| **Juanita Creek** | Unfiltered | 28.2 | 304 |
| **Control** | Filtered | 23.0 | 285 |
| **Rock Creek** | Filtered | 22.6 | 334 |
| **Lyon Creek** | Filtered | 19.8 | 340 |
| **Juanita Creek** | Filtered | 24.0 | 331 |

No reduction in growth to *S. capricornutum* in the unfiltered or filtered samples was observed in the urban streams when compared to Rock Creek. Filtration of all creek samples increased growth compared to that of the unfiltered samples, possibly indicating growth inhibition factors associated with particulates. No confounding factors were observed during the test. Control performance and reference toxicant test results were within acceptable limits.

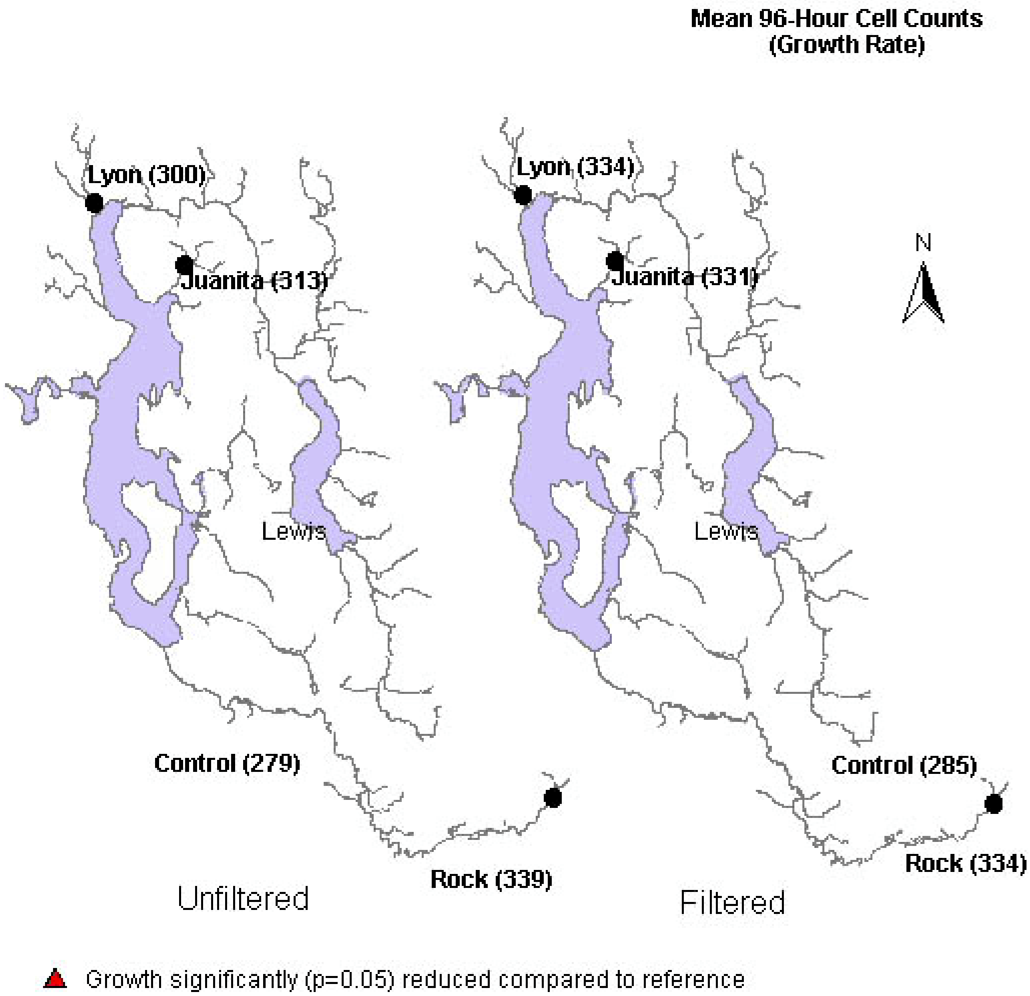



**Figure 9. Late fall (November 16, 1999) *S. capricornutum* toxicity test results.**

## 4.1.6. Combined Results

The following sections provide a summary of all toxicity test results, and discuss potential temporal trends. In addition, the suitability of the reference site is also discussed.

### *4.1.6.1. Lemna minor Toxicity tests*

As *Lemna minor* was only tested in May 1998, temporal trends cannot be evaluated.

### 4.1.6.2. Ceriodaphnia dubia *Toxicity tests*

Storm samples from three urban streams were tested with *C. dubia* in the spring of 1998 and throughout 1999 (Table 3-7). Chronic toxicity, as indicated by a significant ($p < 0.05$) reduction in reproduction when compared with the reference stream, Rock Creek, was only observed in the unfiltered Lyon Creek sample in May 1998. No toxicity was observed in any of the other toxicity tests conducted on unfiltered samples, regardless of when they were tested. Statistically significant reductions in reproduction compared to the unfiltered Rock Creek reproduction were observed in filtered Rock and Lyon creek samples in June 1999. As discussed in Section 3.1.2, in Rock Creek this may have been an artifact of low concentrations of food in the water relative to the unfiltered sample. No toxicity was observed in any of the other toxicity tests conducted on filtered samples, regardless of when they were tested.

**Table 3-7. Average neonate production (# of offspring) for *C. dubia* toxicity tests conducted 1998-1999.**

| SAMPLE SITE | Treatment | 5 / 1998 Storm | 6 / 1999 Storm | 8 / 1999 Baseline | 10 / 1999 Storm | 11 / 1999 Storm |
|---|---|---|---|---|---|---|
| **Control** | Unfiltered | 28.4 | NT | 28.5 | 25.1 | 24.4 |
| **Rock Creek** | Unfiltered | 24.4 | 20.5 | 25.4 | 26.4 | 18.7 |
| **Lyon Creek** | Unfiltered | 18.6* | 28.3 | 25.5 | 29.3 | 24.8 |
| **Juanita Creek** | Unfiltered | NT | 27.8 | 28.6 | 28.0 | 28.2 |
| **Lewis Creek** | Unfiltered | NT | 26.8 | NT | NT | NT |
| **Control** | Filtered | NT | 25.1 | NT | 22.4* | 23.0 |
| **Rock Creek** | Filtered | NT | 12.6* | NT | 23.6 | 22.6 |
| **Lyon Creek** | Filtered | NT | 16.2* | NT | 26.7 | 19.8 |
| **Juanita Creek** | Filtered | NT | 19.1 | NT | 24.0 | 24.0 |
| **Lewis Creek** | Filtered | NT | 17.1 | NT | NT | NT |

*Significantly ($p < 0.05$) less compared to unfiltered Rock Creek sample.

NT = Not tested

### 4.1.6.3. S. capricornutum *Toxicity tests*

Storm and baseline samples from three urban streams were tested with *S. capricornutum* in the spring of 1998 and throughout the year of 1999. Chronic toxicity, as indicated by a significant ($p < 0.05$) reduction in growth when compared with the reference stream, Rock Creek, was seen in all spring, summer and early fall unfiltered samples except the Lyon Creek August 1999 sample. No chronic toxicity was observed in storm samples collected in Lyon and Juanita Creek in late fall. Filtration removed toxicity in all stream samples except the Juanita Creek sample collected in June 1999. Similar or better growth was observed in the filtered Rock Creek samples when compared to the unfiltered samples, suggesting that at times growth inhibitory factors may have been associated with particulates. Despite the potential effects particulates may have on the growth in Rock Creek samples, the growth in the unfiltered Rock Creek sample was similar to the growth in the unfiltered algal assay medium (AAM) in-house control throughout the testing period. This suggests the Rock Creek site provided a good reference for assessing growth in the other stream samples. A slight decrease in biomass was observed in the Rock Creek samples throughout the season, as shown is Table 3-8, ranging from 268 to 436 cells/mL x $10^4$.

**Table 3-8. Cell growth (cells/mL x $10^4$) for *S. capricornutum* toxicity tests conducted 1998-1999.**

| | Treatment | 5 / 1998 Storm | 6 / 1999 Storm | 8 / 1999 Baseline | 10 / 1999 Storm | 11 / 1999 Storm |
|---|---|---|---|---|---|---|
| **Control** | Unfiltered | 370 | 317 | 325 | 323 | 279 |
| **Rock Creek** | Unfiltered | 436 | 364 | 300 | 281 | 268 |
| **Lyon Creek** | Unfiltered | 165* | 37* | 285 | 43* | 249 |
| **Juanita Creek** | Unfiltered | NT | 71* | 261* | 205* | 304 |
| **Lewis Creek** | Unfiltered | NT | 254* | NT | NT | NT |
| **Control** | Filtered | NT | 325 | NT | 322 | 285 |
| **Rock Creek** | Filtered | 416 | 330 | 307 | 339 | 334 |
| **Lyon Creek** | Filtered | 391 | 346 | 339 | 300 | 340 |
| **Juanita Creek** | Filtered | NT | 135* | 352 | 313 | 331 |
| **Lewis Creek** | Filtered | NT | 319 | NT | NT | NT |

*Significantly ($p < 0.05$) less compared to unfiltered Rock Creek sample.

NT = Not tested

Taken together, the *C. dubia* and *S. capricornutum* data from 1998 and 1999 do not suggest any clear temporal toxicity trends.

## 4.2. Chemical Analytical Results

The number of pesticides, metals, and BNA extractable organic compounds detected during the 1998 and 1999 sampling events are listed in Table 3-9. Detailed results, along with hardness and TSS concentrations, are presented in Appendices B and C.

**Table 3-9. Total parameters detected and undetected in each creek (1998-1999).**

| | Pesticides | | Metals | | BNA Organics | |
|---|---|---|---|---|---|---|
| | Detected | Undetected | Detected | Undetected | Detected | Undetected |
| **Lyon** | 21 | 133 | 13 | 5 | 3 | 69 |
| **Lewis** | 16 | 138 | 10 | 7 | N/A | N/A |
| **Juanita** | 24 | 130 | 13 | 4 | N/A | N/A |
| **Rock** | 1 | 153 | 9 | 8 | N/A | N/A |

A total of 26 pesticides, 14 metals, and 3 BNA organics were detected in at least one sample. Furthermore, bis(2-ethylhexyl)phthalate was also detected in the field blank; therefore, bis(2-ethylhexyl)phthalate concentrations may be the result of sample contamination. Table 3-10 provides summary statistics for all four creeks combined across all sampling events for the 43 detected parameters, including the number of analyses, the number of detects, the analytical detection limits, and the minimum and maximum detected concentrations.

### Table 3-10. Minimum and maximum concentrations (µg/L) for parameters detected in 1998 and 1999.

| Parameter | *n* | # detected | MDL | Min | Max |
|---|---|---|---|---|---|
| ***Pesticides*** | | | | | |
| 2,4-D | 15 | 10 | 0.042[a] | 0.015 | 0.69 |
| 2,6-Dichlorobenzamide | 15 | 8 | 0.081[a] | 0.016 | 0.1 |
| 4-Nitrophenol | 15 | 3 | 0.073[a] | 0.04 | 0.1 |
| 4,4'-DDD | 15 | 2 | 0.035[a] / 0.006 | 0.0021 | 0.0028 |
| 4,4'-DDE | 15 | 2 | 0.035[a] | 0.0021 | 0.0027 |
| 4,4'-DDT | 15 | 4 | 0.035[a] | 0.002 | 0.084 |
| Atrazine | 15 | 3 | 0.071[a] / 0.001 | 0.004 | 0.021 |
| Bromacil | 15 | 1 | 0.28[a] | 0.009 | 0.009 |
| Carbaryl | 15 | 4 | 0.003 | 0.012 | 0.12 |
| Diazinon | 15 | 9 | 0.06[a] / 0.002 | 0.013 | 0.425 |
| Dicamba | 15 | 7 | 0.042[a] | 0.011 | 0.04 |
| Dichlobenil | 15 | 10 | 0.16[a] | 0.014 | 0.31 |
| Dichlorprop | 15 | 3 | 0.046[a] | 0.01 | 0.032 |
| Malathion | 15 | 3 | 0.060[a] / 0.005 | 0.01 | 0.037 |
| MCPA | 15 | 3 | 0.083[a] | 0.03 | 0.092 |
| MCPP | 15 | 9 | 0.083[a] | 0.028 | 0.77 |
| Metolachlor | 15 | 1 | 0.28[a] / 0.002 | 0.142 | 0.142 |
| Napropamide | 15 | 1 | 0.21[a] / 0.003 | 0.02 | 0.02 |
| Pentachlorophenol | 15 | 9 | 0.021[a] | 0.013 | 0.11 |
| Prometon | 15 | 9 | 0.071[a] / 0.018 | 0.009 | 0.114 |
| Simazine | 15 | 7 | 0.072[a] / 0.005 | 0.004 | 4.99 |
| Trichlorpyr | 15 | 10 | 0.035[a] | 0.04 | 0.416 |
| Trifluralin | 15 | 2 | 0.11[a] / 0.002 | 0.006 | 0.041 |
| | | | | | |
| ***Metals*** | | | | | |
| Aluminum | 1 | 1 | 20 | 1210 | 1210 |
| Antimony | 13 | 4 | 0.5 | 0.5 | 0.8 |
| Arsenic | 13 | 12 | 0.5 | 0.7 | 8.2 |
| Barium | | 13 | 0.2 | 5.2 | 111.0 |
| Beryllium | 13 | 1 | 0.2 | 0.2 | 0.2 |

| Parameter | *n* | # detected | MDL | Min | Max |
|---|---|---|---|---|---|
| Cadmium | 13 | 3 | 0.1 | 0.2 | 0.5 |
| Chromium | 13 | 12 | 0.4 | 0.4 | 25.2 |
| Cobalt | 10 | 9 | 0.2 | 0.3 | 7.7 |
| Copper | 13 | 13 | 0.4 | 0.5 | 37.4 |
| Lead | 13 | 10 | 0.2 | 0.0 | 66.0 |
| Molybdenum | 13 | 3 | 0.5 | 0.5 | 0.7 |
| Nickel | 13 | 12 | 0.3 | 0.4 | 29.8 |
| Vanadium | 10 | 10 | 0.3 | 0.4 | 31.3 |
| Zinc | 13 | 12 | 0.5 | 0.6 | 116.4 |
| | | | | | |
| ***BNA Organics*** | | | | | |
| Benzoic Acid | 2 | 1 | 0.94-0.98 | 1.58 | 1.58 |
| bis(2-ethylhexyl)phthalate | 2 | 2 | 0.14-0.15 | 0.323 | 1.11 |
| Caffeine | 2 | 2 | 0.049-0.052 | 0.052 | 0.15 |

[a] Quantitation Limit for Department of Ecology analyses. Quantitation limits are approximate and are often different for each sample; these values are representative of a typical value (Frans and Embry 2000).

[b] USGS Method Detection Limit

A total of 133 pesticides, four metals, and 69 BNA organics were analyzed for at least once but never detected at any time in any of the creeks sampled. These parameters are listed in Table 3-11.

### Table 3-11. Parameters never detected in any of the creeks sampled in 1998 and 1999.

| ANALYTE | |
|---|---|
| ***Pesticides*** | |
| 2,3,4,5-Tetrachlorophenol | Endrin Aldehyde |
| 2,3,4,6-Tetrachlorophenol | Endrin Ketone |
| 2,4’-DDD | EPN |
| 2,4’-DDE | EPTC |
| 2,4’-DDT | Ethalfluralin |
| 2,4,5-T | Ethion |
| 2,4,5-TB | Ethoprop |
| 2,4,5-TP | Fenamiphos |
| 2,4,5-Trichlorophenol | Fenarimol |
| 2,4,6-Trichlorophenol | Fenitrothion |
| 2,4-DB | Fensulfothion |
| 2,6-Diethylanaline | Fenthion |

| ANALYTE | |
|---|---|
| 3,5-Dichlorobenzoic Acid | Fonofos |
| 4,4’-DDD | gamma-Chlordene |
| 4,4’-DDE | Gamma-HCH |
| 4,4’-DDT | Glyphosate |
| Acetochlor | Heptachlor |
| Acifluorfen | Heptachlor Epoxide |
| Alachlor | Hexazinone |
| Aldrin | Ioxynil |
| alpha-Chlordene | Linuron |
| alpha-HCH | Merphos (1 & 2) |
| Ametryn | Metalaxyl |
| Atraton | Methoxychlor |
| Azinphos ethyl | Methyl Chlorpyrifos |
| Azinphos-methyl | Methyl Paraoxon |
| Benfluralin | Methyl parathion |
| Bentazon | Metribuzin |
| beta-HCH | Mevinphos |
| Bromoxynil | MGK264 |
| Butachlor | Mirex |
| Butylate | Molinate |
| Captafol | Norflurazon |
| Captan | Oxychlordane |
| Carbofuran | Oxyfluorfen |
| Carbophenothion | Parathion |
| Carboxin | Pebulate |
| Chlorothalonil | Pendimethalin |
| Chlorpropham | Phorate |
| Chlorpyrifos | Phosmet |
| cis-Chlordane | Phosphamidan |
| cis-Nonachlor | Picloram |
| cis-Permethrin | Profluralin |
| Coumaphos | Prometryn |
| Cyanazine | Pronamide |
| Cycloate | Propachlor |
| DCPA | Propanil |
| DDMU | Propargite |
| delta-HCH | Propazine |
| Demeton-O | Propetamphos |
| Demeton-S | Ronnel |

| ANALYTE | |
|---|---|
| Desethylatrazine | Sulfotep |
| Di-allate | Sulprofos |
| Dichlobenil | Tebuthiuron |
| Dichlorvos | Temephos |
| Diclofop-Methyl | Terbacil |
| Dicofol | Terbufos |
| Dieldrin | Terbutryn |
| Dimethoate | Tetrachlorvinphos |
| Dinoseb | Thiobencarb |
| Dioxathion | Toxaphene |
| Diphenamid | trans-Chlordane |
| Disulfoton | trans-Nonachlor |
| Diuron | Triadimefon |
| Endosulfan I | Triallate |
| Endosulfan II | Tribufos |
| Endosulfan Sulfate | Trichlopyr |
| Endrin | Vernolate |
| ***Metals*** | |
| Mercury | Silver |
| Selenium | Thallium |
| ***BNA Organics (Lyon Creek)*** | |
| 1,2,4-Trichlorobenzene | |
| 1,2-Dichlorobenzene | Benzo(b)fluoranthene |
| 1,2-Diphenylhydrazine | Benzo(g,h,i)perylene |
| 1,3-Dichlorobenzene | Benzo(k)fluoranthene |
| 1,4-Dichlorobenzene | Benzyl Alcohol |
| 2,4,5-Trichlorophenol | Benzyl Butyl Phthalate |
| 2,4,6-Trichlorophenol | Bis(2-Chloroethoxy)Methane |
| 2,4-Dichlorophenol | Bis(2-Chloroethyl)Ether |
| 2,4-Dimethylphenol | Bis(2-Chloroisopropyl)Ether |
| 2,4-Dinitrophenol | Carbazole |
| 2,4-Dinitrotoluene | Chrysene |
| 2,6-Dinitrotoluene | Coprostanol |
| 2-Chloronaphthalene | Dibenzo(a,h)anthracene |
| 2-Chlorophenol | Dibenzofuran |
| 2-Methylnaphthalene | Diethyl Phthalate |
| 2-Methylphenol | Dimethyl Phthalate |
| 2-Nitroaniline | Di-N-Butyl Phthalate |
| 2-Nitrophenol | Di-N-Octyl Phthalate |

| ANALYTE | |
|---|---|
| 3,3'-Dichlorobenzidine | Fluoranthene |
| 3-Nitroaniline | Fluorene |
| 4,6-Dinitro-O-Cresol | Hexachlorobenzene |
| 4-Bromophenyl Phenyl Ether | Hexachlorobutadiene |
| 4-Chloro-3-Methylphenol | Hexachlorocyclopentadiene |
| 4-Chloroaniline | Hexachloroethane |
| 4-Chlorophenyl Phenyl Ether | Indeno(1,2,3-Cd)Pyrene |
| 4-Methylphenol | Isophorone |
| 4-Nitroaniline | Naphthalene |
| 4-Nitrophenol | Nitrobenzene |
| Acenaphthene | N-Nitrosodimethylamine |
| Acenaphthylene | N-Nitrosodi-N-Propylamine |
| Aniline | N-Nitrosodiphenylamine |
| Anthracene | Pentachlorophenol |
| Benzidine | Phenanthrene |
| Benzo(a)anthracene | Phenol |
| Benzo(a)pyrene | Pyrene |